

The "Branding Iron" EPROM Programmer (MOD. 16-32)

INSTRUCTIONS

Read all instructions prior to actual programming.

General

The K-Z Systems "Branding Iron" EPROM Programmer provides the hardware and software for programming 2716 (2K x 8) or 2532 (4K x 8), (5 Volt version) EPROM's with any 2000/3000 series PET/CBM Computers. The "Branding Iron" Programmer allows you to program an EPROM, verify its contents, or copy its contents to RAM. These features along with features inherent in PET make for a very efficient programming system. A program may be developed with the PET or be loaded into the PET from tape, disc, or another ROM. It may be edited, relocated or whatever, - then be loaded from any address into EPROM for permanent future access.

CONNECTING THE PROGRAMMER TO 2000 SERIES PET/CBM COMPUTERS (1.0/2.0/3.0 ROM SET)

The K-Z Programmer connects to the PET via the 2nd Cassette Port and the User Port, leaving the First Cassette Port open for use with a tape deck. The IEEE Port has also been avoided so that a disc system may be used in conjunction with the Programmer. Remember that the 2nd Cassette Port is in the back of PET on the original 8K PET, and is inside the case on the 2nd generation PET/CBM. Be sure to connect to the proper Cassette Port.

With the PET turned off and no EPROM in the Programming Socket connect the appropriate cable to the User Port in the rear of the PET (note it is marked showing which side is up). In the case of the original PET plug the remaining cable into the 2nd Cassette Port at the rear of the PET. For the 2nd generation PET connect the remaining cable to the 2nd Cassette Port inside the case (connector is marked up side). Plug the transformer into a convenient AC outlet. After checking the connections close the PET making sure the cables are not pinched in the case. Note: Unplug the AC connection when system is not in use.

CONNECTING THE PROGRAMMER TO 4000/3000 SERIES PET/CBM COMPUTERS (4.0 ROM SET)

The instructions above, for the 2000 series computers, apply except that the 4000/3000 series computer requires the use of the 1st Cassette Port instead of the 2nd Cassette Port. Be sure to check the CBM Manuel for proper cassette port.

LOADING THE PROGRAM

Turn the PET on and load the EPROM program from the tape supplied. Load the tape in the conventional manner. When the program has loaded and RUN it will display an abbreviated set of instructions. (Do not rewind tape at this point.) When you are finished with the instructions select the proper program number for your computer. The PET will pick out the proper program and load it when you hit the RETURN key. Since there are usually several programs to go through before you find the one needed, you may wish to re-record the program you will be using most frequently for your convenience. For your convenience the SYS # for the program selected is displayed on the lower portion of the screen. Move the cursor to this line and hit the RETURN key to start the program. In the case of the older PET the monitor program is combined with the EPROM Program on the tape. When using the program with the newer PET the EPROM Program is appended to the PET Monitor, which is in ROM. All PET/CBM Computers respond with the usual Monitor format as shown -

```
Example:  C*   PC   SR   AC   XR   YR   SP
          .: C6ED 88   88   88   80   FE
          .|
```

All commands contained in the monitor (M, S, L..G, etc.) still function in their usual way plus three new commands that have been added - P, V, C, (Program, Verify, and Copy). If a 2532 (4K) EPROM is going to be programmed type T 32 in as a monitor command and press RETURN. (Note the space between T and the number 32.) The system defaults to the 2716 therefore nothing is required unless you are going from programming a 2532 to a 2716, then type in T 16 and press RETURN.

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Example:  .
          .T 32
          .|
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PROGRAM SUMMARY

COMPUTER TYPE	PGM. NAME	ADDRESSES	SYS.
Original PET	1.0/2.0 ROM	0400-09EA	SYS 1908
2nd generation PET	3.0 ROM	1800-1A88	SYS 6144
All 4.0 ROM PETS	4.0 ROM	1800-1A95	SYS 6144

PROGRAMMING THE EPROM

The letter P is the program command. It directs the contents of PET's memory, between a beginning and ending address, to be loaded into the EPROM being programmed.

Format Example: P 2000 27FF

Note: This programs all of a 2K EPROM

NOTE: All addresses and contents are in Hexidecimal.
Remember to leave one space between the command and the starting address, and one space or a comma between the start and end address.

Programming is limited within a 4K boundary. If you start at the first address of a boundary (example - \$B000, \$1000, or \$2000) the first byte will be loaded into the first location in the EPROM, the second byte into the second location, - etc. If you wish to program a short routine into EPROM they may be programmed as needed - example a routine from \$B300 - \$B4AC would start loading the EPROM at the 768th location (or \$0300) to the 1196th location (or \$04AC). At a later time you can enter another routine starting at \$04AD. All empty areas within the EPROM may be filled in this manner as needed.

PROGRAMMING PROCEDURE

1. Place the status switch in READ position.
2. Insert erased EPROM into the programming socket -- be certain pin orientation is correct.
3. Type the letter P followed with a space, then the start, space, and ending addresses.
4. Place the status switch in PGM position and press RETURN.
5. The status light will turn on while programming is in progress. The address being programmed is shown in the lower left corner of the screen rapidly counting toward the end address. The program checks each byte location as the EPROM is programmed to be certain that it is completely erased (contains FF in each location) or is in some way defective. Any error will show on the screen - address, error and its location will be shown in reverse field.
6. When the status light turns off, program is complete.
7. Return status switch to READ position.

VERIFYING THE EPROM

The letter V is the verify command. It compares the contents of a programmed EPROM with the contents of PET's memory between a selected start and end address.

Format Example: V 2000 27FF

The contents of the first location in the EPROM will be compared to \$2000, the second location to \$2001, etc.

Note: Remember the spaces and Hexidecimal numbers.

VERIFICATION PROCEDURES

1. Place status switch in READ position.
2. Insert EPROM into programming socket, if not already in it. Check pin orientations.
3. Type the letter V followed by a SPACE then the start address, SPACE and the end address.
4. Press RETURN.
5. Verification is confirmed almost instantly when the blinking cursor reappears to the right of a period. If an error is encountered it will be illustrated on the screen in reverse field showing the memory address, memory contents and EPROM contents.
6. Verification is complete.

COPYING THE EPROM

Since the programming socket has no address its contents cannot be read directly. It is therefore necessary to transfer the EPROM contents into RAM and then read the RAM contents using the M command. The transfer is accomplished using the C or copy command.

Format Example: C 2000 27FF

The contents of the EPROM will be copied into RAM starting at \$2000 through \$27FF. The contents once transferred into RAM may be viewed or edited as required using:

M 2000 27FF

Note: \$2000 to \$27FF displays 2048 bytes as in the case of a 2716 (2K EPROM) - an address \$2000 to \$2FFF would be used to display an entire 2532 (4K EPROM).

We have arbitrarily selected \$2000-up as a convenient RAM storage area. You may choose another area. A different RAM area must be used with any 3K PET since \$2000-up does not exist.

COPYING PROCEDURE

1. Place the status switch in the READ position.
2. Insert the EPROM into the Programming Socket. Check pin orientations.
3. Type the letter C followed by a SPACE, then the beginning address, SPACE and the ending address.
4. Press RETURN.
5. The copy is made almost instantly, and is complete when the cursor reappears.

ADDENDUM

A Textool (224-3344) or AMP (54501-1) Zero Insertion Force Socket may be plugged into the existing programming socket for those who may be doing a large amount of programming.

It is sometimes advisable to check the contents of an erased EPROM to be sure it is completely erased. Using the C and M commands all locations should read FF.

Occasionally, if an EPROM does not fully program try reprogramming the faulted section.

January 1, 1982 -- our new address is

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